

REMARKS

This Amendment is fully responsive to the final Office Action dated March 5, 2010, and the Advisory Action dated June 15, 2010, issued in connection with the above-identified application. A request for a two-month extension of time and a request for continued examination (RCE) are included. Claims 1-27 are pending in the present application. With this Amendment, claims 1, 3, 4, 11 and 15-20 have been amended and claims 2 and 21-27 have been canceled without prejudice or disclaimer to the subject matter therein. No new matter has been introduced by the amendments made to the claims. Favorable reconsideration is respectfully requested.

In the Office Action, claims 1, 8, 9, 13, 15-17, 19-24, 26 and 27 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (European Publication No. 1134933, hereafter “Tomohiko”) in view of Sharony (U.S. Publication No. 2004/0057459, hereafter “Sharony”); and claims 18 and 25 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko in view of Sharony, and further in view of Wakai (U.S. Patent No. 5,973,722, hereafter “Wakai”).

Additionally, in the Advisory Action, the Examiner indicates that the Applicants, in distinguishing the present invention from the cited prior art, appear to rely on features that are not clearly recited in the claims. Specifically, the Examiner indicates that the independent claims do not recite “re-transmission for IP multicast/broadcast” or “a MAC layer or IP layer,” as argued by the Applicants.

The Applicants have amended independent claims 1 and 15-20 to include the above features. Additionally, the Applicants have amended independent claims 1 and 15-20 to add features to more clearly distinguish the present invention from the cited prior art. Claims 21-27 have been canceled thereby rendering the above rejection to those claims moot. Independent claim 1 (as amended) recites *inter alia* the following features:

“[a] communication system, comprising:
a first communication device; and
a second communication device,...

wherein the re-transmission processing is performed at Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame,

the Multicast frame is an IP Multicast frame, and
said conversion unit is operable to convert the IP Multicast frame into the Unicast
frame in which a MAC address of said second communication device is set as an address
at a data link layer.” (Emphasis added).

The features emphasized above in independent claim 1 are similarly recited in independent claims 15-20 (as amended). Additionally, the features emphasized above in independent claim 1 (and similarly recited in independent claims 15-20) are fully supported by the Applicants' disclosure (see e.g., ¶[0068]; ¶[0073]; and Fig. 3).

The present invention (as recited from independent claims 1 and 15-20) is distinguishable from the cited prior art in that a communication system (or method) includes a first communication device that converts the received Multicast frame into a Unicast frame and transmits the converted Unicast frame to a second communication device (or receiving device) based on a communication protocol having a re-transmission processing.

The layer of the communication protocol having the re-transmission processing is a layer lower than a layer of a communication protocol defining the Multicast frame. That is, the re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer (i.e., Network layer) lower than a layer of a communication protocol defining the Multicast frame, wherein the Multicast frame is an IP Multicast frame. Additionally, a converting unit or step converts the IP Multicast frame into the Unicast frame in which a MAC address of the second communication device (or receiving device) is set as an address at a data link layer.

In the Office Action, the Examiner relies on the combination of Tomohiko and Sharony for disclosing or suggesting all the features recited in independent claims 1 and 15-17, 19 and 20. Additionally, the Examiner relies on the combination of Tomohiko, Sharony and Wakai for disclosing or suggesting the features of independent claim 18. However, the Applicants assert that no combination of the above cited prior art discloses or suggests all the features recited in independent claims 1 and 15-20 (as amended).

As noted above, independent claims 1 and 15-20 have been amended to similarly recite the following:

*“re-transmission processing is performed at Media Access Control (MAC) layer
that is a layer lower than a layer of a communication protocol defining the Multicast
frame,*

*the Multicast frame is an IP Multicast frame, and
said conversion unit is operable to convert the IP Multicast frame into the
Unicast frame in which a MAC address of said second communication device is set as an
address at a data link layer.”*

In the Office Action, the Examiner relies on Sharony for disclosing or suggesting re-transmission processing, which he acknowledges is lacking in Tomohiko (see Office Action, pgs. 6-7). In particular, the Examiner relies on Sharony in ¶[0053]-¶[0057].

The relevant portion of Sharony in ¶[0053]-¶[0057] discloses a system for wireless network channel management where re-transmission processing is performed upon receipt of a re-transmission request. As described in Sharony, the re-transmission request may be in the form of a MAC layer re-transmission request for an 802.11 unicast.

Although Sharony discloses re-transmission processing, there is no re-transmission processing for IP multicast frames, as in the present invention (as recited in independent claims 1 and 15-20). As recited in independent claims 1 and 15-20, re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame, wherein the Multicast frame is an IP Multicast frame.

As noted above, the Examiner acknowledges that Tomohiko fails to disclose or suggest re-transmission processing. Briefly, Tomohiko discloses that if transmission is performed between transfer apparatuses that belong to different Multicast domains, it is not appropriate to employ one-to-many communication, as generally performed by Multicast. Thus, in Tomohiko, the transfer apparatuses communicate with each other via Unicast (see e.g., ¶[0030]). Moreover, nothing in Tomohiko discloses that Unicast can be interpreted to include re-transmission.

Accordingly, no combination of Tomohiko and Sharony discloses or suggests the re-transmission processing now recited in independent claims 1 and 15-20 (as amended).

Additionally, the Examiner does not rely on Wakai for disclosing or suggesting re-transmission processing. Regardless, based on a detailed review of Wakai, the reference fails to overcome the deficiencies noted above in Tomohiko and Sharony.

Independent claims 1 and 15-20 have also been amended to similarly recite to “convert the IP Multicast frame into the Unicast frame in which a MAC address of the second communication device (or receiving device) is set as an address at a data link layer.”

In the Office Action, the Examiner relies primarily on Tomohiko for disclosing or suggesting the features of the conversion unit or step of the present invention.

However, as noted above, Tomohiko discloses that it is not appropriate to employ one-to-many communication, as generally performed by Multicast. Thus, Tomohiko only discloses communication between apparatuses or devices via Unicast. At best, Tomohiko discloses converting an IP multicast frame into an IP unicast frame for communication. Tomohiko fails to disclose or suggest converting an IP Multicast frame into the Unicast frame in which a MAC address of a second communication device (or receiving device) is set as an address at a data link layer, as in independent claims 1 and 15-20.

Neither Sharony nor Wakai were relied on by the Examiner for disclosing or suggesting the above features of the conversion unit or step of the present invention. Accordingly, no combination of Tomohiko, Sharony and Wakai would result in or otherwise render obvious, the features of the conversion unit or step recited respectively in independent claims 1 and 15-20 (as as amended).

Based on the above discussion, no combination of Tomohiko, Sharony and Wakai would result in, or otherwise render obvious, the features of independent claims 1 and 15-20 (as amended). Additionally, no combination of Tomohiko, Sharony and Wakai would result in, or otherwise render obvious, the features of claims 8, 9 and 13 at least by virtue of their dependencies (directly or indirectly) from independent claim 1.

In the Office Action, claims 2 and 4 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko, Sharony, and further in view of Rune (U.S. Publication No. 2006/0062187, hereinafter “Rune”); claim 3 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko, Sharony, Rune, and further in view of Tomohiko U.S. Publication No. 2001/0018714, hereafter “Tomohiko-US”); and claims 5 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko, Sharony, and further in view of Zisapel (U.S. Publication No. 2003/0195984, hereinafter “Zisapel”).

Additionally, claim 6 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko, Sharony, Zisapel, and further in view of Alexander (U.S. Patent No. 7,411,901, hereinafter “Alexander”); claim 7 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko, Sharony, Zisapel, Alexander, and further in view of Lipp (U.S. Patent No. 6,751,219, hereinafter “Lipp”); claims 11 and 12 have been rejected under 35 U.S.C.

103(a) as being unpatentable over Tomohiko, Sharony, Zisapel, and further in view of Lipp and Alexander; and claim 14 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko, Sharony, and further in view Wesley (U.S. Patent No. 6,076,114, hereinafter "Wesley").

Claim 2 has been canceled thereby rendering the above rejection to that claim moot. Additionally, claims 3-7, 10-12 and 14 depend from independent claim 1. As noted above, Tomohiko and Sharony fail to disclose or suggest all the features in independent claim 1 (as amended). Moreover, Rune, Tomohiko-US, Zisapel, Alexander, Lipp and Wesley fail to overcome the deficiencies noted above in Tomohiko and Sharnoy.

Accordingly, no combination of Tomohiko and Sharnoy in combination with Rune, Tomohiko-US, Zisapel, Alexander, Lipp or Wesley would result in, or otherwise render obvious, claims 3-7, 10-12 and 14 at least by virtue of their dependencies (directly or indirectly) from independent claim 1.

In light of the above, the Applicants submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner withdraw the rejections presented in the outstanding Office Action, and pass the present application to issue. Additionally, the Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues in the present application.

Respectfully submitted,

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